

Biology	Group-II	Paper-II
Time: 1.45 Hours	(Subjective Type)	Max. Marks: 48

(Part-I)

2. Write short answers to any FIVE (5) questions: (10)

(i) What is the difference between breathing and cellular respiration?

Ans The term breathing is used for the process through which animals take air in their bodies to get oxygen from it and then give out the air for getting rid of carbon dioxide. Whereas cellular respiration is the process in which the C-H bonds in food are broken by oxidation-reduction reactions and the energy is transformed into ATP.

(ii) What is pneumonia? Write its symptoms.

Ans Pneumonia is an infection of lungs. If this infection affects both lungs, then it is called double pneumonia. The most common cause of pneumonia is a bacterium, *streptococcus pneumoniae*.

Symptoms:

The symptoms of pneumonia include a cold that is followed by high fever, shivering, and a cough with sputum production. Patient may become short of breath. The patient's skin colour may change and become dusky. It is due to poor oxygenation of blood.

(iii) What is meant by lung cancer? Write its two causes.

Ans Lung cancer is a disease of uncontrolled cell divisions in the tissue of the lung. The cells continue to divide without any control and form tumors. The cellular growth may also invade adjacent tissues beyond the lungs.

Causes of Lung Cancer:

The main cause of any cancer include carcinogens (such as those in cigarette smoke), ionizing radiation and viral infection.

(iv) What is called guttation?

Ans If there is a high water content in soil, water enters the roots and is accumulated in xylem vessels. Some plants such as grasses force this water through special pores, present at leaf tips or edges, and form drops. The appearance of drops of water on the tips or edges of leaves is called guttation.

(v) What is meant by lithotripsy?

Ans Lithotripsy is method for the removal of kidney stones. In this method, non-electrical shock waves from outside are bombarded on the stones in the urinary system. Waves hit the dense stones and break them. Stones become sand-like and are passed through urine.

(vi) What are two important functions of spinal cord?

Ans Following are two important functions of spinal cord:

1. It serves as a link between body parts and brain. Spinal Cord transmits nerve impulses from body parts to brain.
2. Spinal cord also acts as a coordinator responsible for some simple reflexes.

(vii) Differentiate between myopia and hypermetropia.

Ans The condition in which a person is not able to see distant objects clearly is called myopia. It happens due to elongation of the eyeball and image is formed in front of the retina. Whereas the condition in which a person is not able to see near objects clearly is called hypermetropia. It happens when the eyeball shortens and image is formed behind the retina.

(viii) What is paralysis? Write down its causes.

Ans Paralysis is the complete loss of function by one or more muscle groups. It is most often caused by damage to the central nervous system (brain or spinal cord). The

damage may be due to stroke (rupture in a blood vessel of brain or spinal cord), blood clotting in these blood vessels, or poison produced by polio viruses.

3. Write short answers to any FIVE (5) questions: (10)

(i) Differentiate between movement and locomotion.

Ans Movement is an act of changing place or position by entire body or by its parts. Whereas locomotion is the movement of an animal as a whole from one place to another.

(ii) What is Skeleton? Write one merit.

Ans Skeleton is defined as the framework of hard, articulated structures that provide physical support, attachment for skeletal muscles and protection for the bodies of animals.

One merit of skeleton is that it works very closely with the muscular system to help us move.

(iii) Explain parthenogenesis with example.

Ans Parthenogenesis is also considered as a form of asexual reproduction. In it, an unfertilized egg develops into new offspring. Some fishes, frogs and insects reproduce by means of parthenogenesis.

(iv) Write down procedure of tissue culture.

Ans The procedure of tissue culture is that tissues are taken from any part of plant and are put in a suitable nutrient medium. The tissue cells start mitosis and produce masses of cells called calluses are transferred to other medium that contains different hormones for the formation of roots, stem and leaves. Calluses make these structure and grow into new small plants. The small plants are then placed in pots and then in fields.

(v) Differentiate between two methods of pollination.

Ans Self-pollination and cross pollination are two methods of pollination. Difference between them is following:

Self-pollination is defined as the transfer of pollen grains from the anther to the stigma of the same flower or other flower of the same plant. Whereas cross pollination is the transfer of pollen grains from the flower on one plant to the flower on other plant of the same species. Cross pollination is brought about by various agencies like wind, water, bees, birds, bats and other animals including man.

(vi) Differentiate between translation and transcription.

Ans The specific sequence of DNA nucleotides is copied in the form of messenger RNA (mRNA) nucleotides. This process is called transcription. The mRNA carries the sequence of its nucleotides to ribosome. The ribosome reads this sequence and joins specific amino acids, according to it, to form protein. This step is known as translation.

(vii) What is difference between homozygous and heterozygous?

Ans The genotype in which the gene pair contains two identical alleles (AA or aa), is called **homozygous** genotype.

The genotype in which the gene pair contains two different alleles (A a), is called **heterozygous** genotype.

(viii) Write two important processes for organic evolution.

Ans Following are two important processes for organic evolution:

1. Alteration in genetic characteristics (traits) of a type of organism overtime.
2. Creation of new types of organisms from a single type.

4. Write short answers to any FIVE (5) questions: (10)

(i) Define ecosystem.

Ans The self-sufficient unit of an environment that is formed as a result of interactions between its biotic community and the abiotic components is known as an ecosystem.

(ii) What is deforestation? Give its two effects.

Ans Deforestation means clearing of forests by natural causes or humans.

The two effects of deforestation include floods and drought.

(iii) What are pollutants? Give two examples.

Ans The substances that actually cause pollution are called the pollutants. Two examples of pollutants are industrial effluents and domestic wastes.

(iv) How cheese is formed?

Ans Cheese is formed when a milk protein is coagulated. This happens when the acid produced by lactic acid bacteria reacts with milk protein.

(v) How human growth hormone was obtained before genetic engineering?

Ans Before genetic engineering, human growth hormone was obtained by sheep brain. 5,00,000 sheep brains were required to produce 5 mg human growth hormone.

(vi) How terramycin developed?

Ans Researchers of pharmaceutical company spent two years testing soil from all parts of the world to find new antibiotics. The project resulted in the development of one antibiotics, terramycin, which is used to treat many infections.

(vii) How sedatives work?

Ans Sedatives induce sedation by reducing irritability or excitement e.g., diazepam.

(viii) Differentiate between bactericidal and bacteriostatic antibiotics.

Ans Bactericidal are the antibiotics which work by killing bacteria, while the antibiotics that work by stopping bacteria multiplying are called bacteriostatic antibiotics.

NOTE: Attempt any TWO (2) questions.

Q.5.(a) Describe the two types of dialysis in detail. (4)

Ans **Types of Dialysis**

Dialysis means the cleaning of blood by artificial ways. Following are two types of dialysis:

1. Peritoneal Dialysis:

In this type of dialysis, the dialysis fluid is pumped for a time into the peritoneal cavity which is the space around gut. This cavity is lined by peritoneum. Peritoneum contains blood vessels. When we place dialysis fluid in peritoneal cavity, waste materials from peritoneal blood vessels diffuse into the dialysis fluid, which is then drained out. This type of dialysis can be performed at home, but must be done everyday.

2. Haemodialysis:

In haemodialysis, patient's blood is pumped through an apparatus called dialyzer. The dialyzer contains long tubes, the walls of which act as semi-permeable membranes. Blood flows through the tubes while the dialysis fluid flows around the tubes. Extra water and wastes move from blood into the dialysis fluid. The cleansed blood is then returned back to body. The haemodialysis treatments are typically given in dialysis centres three times per week.

(b) What is meant by neuron? Describe its types. (5)

Ans **Nerve cell or neuron:**

Nerve cell or neuron is the unit of the nervous system. The human nervous system consists of billions of neurons plus supporting cells. Neurons are specialized cells that are able to conduct nerve impulses from receptors to coordinators and from coordinators to effectors. In this way, they communicate with each other and with other types of body cells.

Types of neurons:

On the basis of their functions, neurons are of three types:

(i) Sensory neurons:

These neurons conduct sensory information from receptors towards the CNS. Sensory neurons have one dendrite and one axon.

(ii) Interneurons:

Interneurons form brain and spinal cord. They receive information, interpret them and stimulate motor neurons. They have many dendrites and axons.

(iii) Motor neurons:

Motor neurons carry information from interneurons to muscle or glands (effectors). They have many dendrites but only one axon.

Q.6.(a) Define joints and explain the types of joints with the help of examples. (4)

Ans For Answer see Paper 2017 (Group-I), Q.6.(a).

(b) State any five methods of natural vegetative propagation. (5)

Ans For Answer see Paper 2017 (Group-I), Q.6.(b).

Q.7.(a) Explain producers and consumers with examples. (4)

Ans The biotic components comprise the living part (organisms) of the ecosystem. Biotic components are further classified as producers, consumers and decomposers.

The **producers** are the autotrophs present in an ecosystem. Producers include plants, algae and photosynthetic bacteria. These organisms are able to synthesize complex organic compounds (food) from inorganic raw materials. Producers form the basis of any ecosystem. In terrestrial ecosystems, plants are the main producers. In aquatic ecosystems, the main producers are

the floating photosynthetic organisms (mainly algae) called phytoplankton and shallow water rooted plants.

The **consumers** are heterotrophs. They cannot synthesize their food and so depend upon producers for food. Consumers include all animals, fungi, protozoans and many of the bacteria. The animals are the major consumers of ecosystems. They are further classified as herbivores and carnivores.

Herbivores e.g., cattle, deer, rabbit, grasshopper, etc. feed on plants. They are the **primary consumers**. They feed directly on plants or products of plants.

Carnivores feed on other animals. Primary carnivores (**secondary consumers**) feed on herbivores. Fox, frog, predatory birds, many fishes and snakes etc. are primary carnivores. Secondary carnivores (**tertiary consumers**) feed on primary carnivores. Wolf and owl etc. are secondary carnivores. Tertiary carnivores e.g., lion, tiger, etc. feed on secondary carnivores.

Decomposers or reducers break down the complex organic compounds of dead matter (of plants and animals) into simple compounds. They secrete digestive enzymes into dead and decaying plant and animal remains to digest the organic material. After digestion, decomposers absorb the products for their own use. The remaining substances are added to environment. Many types of bacteria and fungi are the principal decomposers of biosphere.

(b) Describe the basic steps in genetic engineering. (5)

Ans For Answer see Paper 2017 (Group-I), Q.7.(b).